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OVIS SHELDONI, A NEW MOUNTAIN SHEEP FROM SIERRA DEL ROSARIO, SONORA, MEXICO.

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When hunting mountain sheep in the Gila and Tule Ranges in southwestern Arizona and the Viejo and Pinacate Ranges in northern Sonora in 1913 and 1914, Charles Sheldon of New York noticed a low ridge, the Sierra del Rosario, lying parallel to, and to the southwest of the Gila Range (also known as the Sierra de las Tinajas Altas), from which it is separated by about 12 miles of desert. To the northwest, west, and south there are no mountains, the desert stretching all the way to the Colorado River and Gulf of California.

Sheldon knew that Carl Lumholtz had ridden out to El Rosario and reported seeing sheep tracks there. Believing that the complete isolation of the range in connection with the nature of the surrounding desert would prevent sheep from crossing to it, Sheldon felt that the animal would be likely to differ from that of the adjacent mountains. In the hope of determining this point, he undertook, in the early part of March of the present year, a special trip to El Rosario, carrying water from Tinajas Altas, 20 miles away. On his way back (March 15, 1916) he wrote me from Wellton, Arizona :

> I have just returned from a very hard hunt for sheep in the mountain of El Rosario. This mountain is parallel with the Gila Range, 12 miles distant, from which it is separated by a flat desert with six or seven miles of soft sand dunes. The part of the mountain large enough for sheep is five miles long and only 1500 to 1700 feet in altitude, and is of the honeycomb type like the Gilas. There is not a drop of water in the whole

range, and practically no cactus on or near it. The nearest water is 20 miles away in the Gilas. There are no signs of anybody having been there for a long time. Lumholtz rode a horse partly around it and reported sheep tracks.* This report induced me to go there, for I felt that if there were sheep on the mountain they would show the effects of long isolation and inbreeding. They must live without water other than that obtained from the scarce rains and scanty vegetation.

I rode over there from Wellton in three days, packed water from the Gila Range, and remained alone for eight days, climbing the crags and hunting for sheep. I soon found that sheep existed there, but only a very few, perhaps not more than five or six, certainly less than ten. At the north end I saw a ewe and lamb; at the south end a mature ram—no other fresh signs on the whole mountain. I undertook the needle-in-the-haystack task of hunting high along the crest for the ram, and finally killed him on the third day after seeing him. Also, I picked up a bleached skull of a mature ewe.

As I had expected, the ram shows the effect of the severe environment. It is a dwarf, the smallest I have ever seen in the United States, Mexico or Alaska. Its skull is very much smaller than skulls from the Gila Range, and shows marked differences. I have Gila skulls here for comparison. I think the ewe will show corresponding differences. Therefore on El Rosario we have the smallest sheep in America; whether you would record this fact in specific terms I do not know.

In another letter he says:

During the long periods between rains—commonly four or five months and sometimes more than eight months—the sheep must live without water for there are no rocks that will hold water more than three or four days. No rain fell between August, 1915, and the time of my visit in March, 1916. The bladder of the ram killed measured two inches and contained only traces of a discolored liquid.

The ram fell on a very steep slope. I had to spend a long time in building a platform of rocks in order to measure its length and height. Even then these measurements are only approximate. The only positive fact about them is that I was most careful to make them greater than they really were.

Examination of Sheldon's specimens confirms the correctness of his conviction that the El Rosario animal is a dwarf sheep previously unknown.

The new form may be characterized as follows:

Ovis sheldoni sp. nov.

Type No. 210585, ♂ adult, U. S. National Museum, Biological Survey Collection. From El Rosario, northern Sonora. Collected March 10, 1916, by Charles Sheldon and by him presented to the Biological Survey.

*New Trails in Mexico, by Carl Lumholtz, p. 316, 1912.

Characters.—Size smallest of the known mountain sheep—a dwarf depauperate desert species, with small skull, relatively large teeth, and small compactly incurved horns; hoofs of essentially the same size as in *gaillardi*.

Color.—Pelage of type specimen much worn and faded; rump stripe narrow; general color of body and legs drab brown, much paler than November and December specimens of *gaillardi* from the neighboring Gila Range. Compared with these, the face is apparently grayer, but owing to the fact that the skin of the head is turned inside out, and very hard and dry (not having yet been tanned), the colors of the head and face can not be satisfactorily made out. The rump stripe is much narrower than in *gaillardi*. There is a small elongate patch of new pelage on the median line where the neck joins the shoulders. Its color is almost slate gray (of Ridgway)—very different from the color of the same part in *gaillardi*.

Cranial characters.—Size small; frontal region markedly dished, rising strongly from facial plane to summit between horns; face and nasals rather short; nasals broadest in middle third; orbits not strongly outstanding; palatal bridge long anteroposteriorly for size of skull. Compared with adult rams of *gaillardi* from the neighboring Gila, Tule, and Pinacate Ranges: Skull very much smaller; frontal region more strongly dished; nasals reaching farther anteriorly and less broadly flattened in middle part; bullae larger; palatine bridge actually as broad or broader, relatively much broader; postpalatal notch shorter; molars essentially the same size, but relatively much larger. Length of molar series exceeds distance from front of series to front of premaxillae by fully ½ inch, while in *gaillardi* rams the two lengths are equal.

Compared with an adult female *gaillardi* (No. 202971) from Tule Mountains, Sonora, the skull of the female *sheldoni* No. 210586 from El Rosario differs in the following particulars: Size conspicuously smaller; orbital rings less outstanding; bullae slightly larger; palatine bridge decidedly larger (about 10 mm. longer anteroposteriorly), less deeply cut by postpalatal notch, and reaching anteriorly nearly to posterior plane of 1st molar [in old ♀ *gaillardi* reaching only to posterior plane of 2d molar]; posterior nares 10 mm. shorter; jugal arm of squamosal shorter; ramus of jaw about 15 mm. shorter, deeply bellied under posterior molars [in *gaillardi* nearly straight]; angle more broadly rounded [in *gaillardi* more squarely angular]; molariform teeth inserted more posteriorly and much less massive, but series of essentially same length; 3d lower premolar with outer sulcus much deeper, and posterior column narrower. Some of the above differences may be due to age, the female skull of *sheldoni*, while fully adult, being less old than the female *gaillardi*.

Flesh measurements of adult ram (the type) taken by Charles Sheldon: Total length including tail, under 52 inches; tail, 3⅞ in.; height at shoulders, under 30 in.; hind foot, 14 in. *Horns* (5 rings): Circumference at base (fresh), 13½ in. [now shrunken to 12⅝]; length, $29\frac{5}{16}$ [now 29⅛]; tip to tip, 12¼; widest outside measurement, 18.

Cranial measurements (millimeters)	♂ ad. 210585	♀ ad. 210586
Condylo-basal length	265	
Basilar length of Hensel	249	
Front of parietals to nasals	105	97
Greatest breadth across orbital rims	153	139
Least breadth of skull between orbits and horn cores	140	102
Least breadth face in front of orbits	86	83
Breadth at facial tubercles	88	84
Nasals, length	105	
Nasals, greatest breadth	45	35
Length palatine bridge (median)	22	24
Length posterior nares	57	55
Length underjaw, angle to middle incisor	217	195
Last molar to posterior margin jaw	53	48
Length upper molariform series	86	83
Length lower molariform series	90	88
Horns, greatest length around curve	735	325
Horns, circumference at base (dry and shrunken)	320	

Stomach contents of mountain sheep (7-year-old ram) killed by Charles Sheldon in the Rosario Mountains, Sonora, March 10, 1916.

From about a quart of coarsely chewed vegetable fragments the following plants were identified by Vernon Bailey and Paul C. Standley: Ground cherry (*Physalis*)—many seeds and a few husks; Joint-fir (Popotillo of the Mexicans, *Ephedra*)—two seeds and stems; Evening primrose (*Anagra*)—one woody capsule; Mallow (*Sphaeralcea*)—a few seeds; Brittle-bush (*Encelia*, two sp.)—stems, seeds, and heads common; Hosackia (*Lotus*)—one seed capsule; Spurge (*Croton*)—three seeds; Buckwheat bush (*Eriogonum*)—stems common; Bedstraw (*Galium*)—a few leaves and stems; Spiny bush (*Krameria*)—stems common; Iron tree (*Olneya tesota*)—leaves and stems common; Lichens—a few bits; Grass—no trace that Professor Hitchcock, the grass expert, could detect. More than half of the stomach contents is unidentifiable.